

PENDING CLAIMS

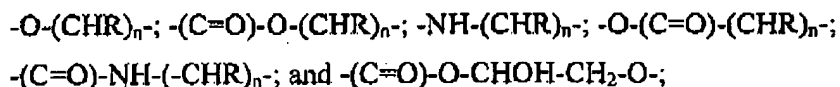
Claim 1. (Previously presented) A multi-layer rigid container for food or beverage packaging comprising at least an inner layer, an outer layer and a core layer between the inner layer and the outer layer, wherein the inner and outer layers are comprised of an aromatic polyester or copolyester, and

wherein the core layer is comprised of (i) an oxygen scavenging polymer comprising a polymer backbone and cyclic olefinic pendent groups covalently linked to the polymer backbone; and (ii) a transition metal catalyst, and

wherein the oxygen transmission rate of the container is less than about 1.0 cc O₂ per square meter per day at atmospheric pressure and 25°C.

Claim 2. (Original) The rigid container of claim 1, wherein the inner layer and the outer layer comprise aromatic polyesters or copolyesters selected from the group consisting of polyethylene terephthalate, polyethylene naphthalate, polypropylene terephthalate, polybutylene terephthalate, polyethylene isophthalate, polycyclohexanedimethanol terephthalate, polybutylene naphthalate and polycyclohexanedimethanol naphthalate, and copolymers and blends thereof.

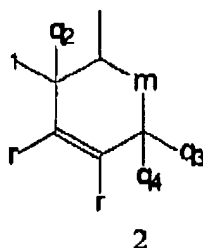
Claim 3. (Original) The rigid container of claim 1, wherein the polymer backbone is ethylenic and the cyclic olefinic pendant groups are linked to the polymer backbone by linking groups selected from the group consisting of:



wherein R is hydrogen or an alkyl group selected from the group consisting of methyl, ethyl, propyl and butyl groups and where n is an integer in the range from 1 to 12.

Claim 4. (Original) The rigid container of claim 1, wherein the cyclic olefinic pendent groups have the structure (II):

(II)

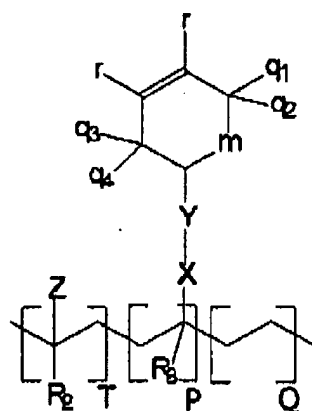


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where q_1 , q_2 , q_3 , q_4 , and r are selected from the group consisting of $-H$, $-CH_3$, and $-C_2H_5$; and where m is $-(CH_2)_n-$ with n being an integer in the range from 0 to 4; and wherein, when r is $-H$, at least one of q_1 , q_2 , q_3 and q_4 is $-H$.

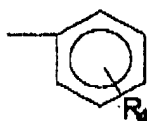
Claim 5. (Original) The rigid container of claim 3, wherein the polymeric backbone, linking groups and cyclic olefinic pendent groups comprise repeating units, each unit having a structure (III) as follows:

(III)



wherein $P+T+Q$ is 100 mol % of the total composition; P is greater than 0 mol % of the total composition; Z is selected from the group consisting of an aryl group; $-(C=O)OR_1$; $-O(C=O)R_1$; and an alkyl aryl group, structure (IV):

(IV)



where R_4 is selected from the group consisting of $-CH_3$, $-C_2H_5$, and $-H$; R_1 is selected from the group consisting of $-H$, $-CH_3$, $-C_2H_5$, $-C_3H_7$ and $-C_4H_9$; R_2 and R_3 are selected from the group consisting of $-H$ and $-CH_3$; X is selected from the group consisting of $-O-$, $-NH-$, $-(C=O)O-$, $-(C=O)NH-$, $-(C=O)S-$, $-O(C=O)-$ and $-(CHR)_\lambda-$; λ is an integer in the range from 1 to 6; Y is $-(CHR)_n-$, where n is an integer in the range from 0 to 12, R being selected from the group consisting of $-H$, $-CH_3$ and $-C_2H_5$; where q_1 , q_2 , q_3 , q_4 , and r are selected from the group consisting of $-H$, $-CH_3$, and $-C_2H_5$; and where m is $-(CH_2)_n-$ and where n is an integer in the range from 0 to 4; and wherein when r is $-H$, at least one of q_1 , q_2 , q_3 and q_4 is $-H$.

Claim 6. (Original) The rigid container of claim 1, wherein the cyclic olefinic pendent group is selected from the group consisting of cyclohexene-4-methylene radical, 1-methyl cyclohexene-4-methylene radical, 2-methyl cyclohexene-4-methylene radical, 5-methyl cyclohexene-4-methylene radical, 1,2-dimethyl cyclohexene-4-methylene radical, 1,5-dimethyl cyclohexene-4-methylene radical, 2,5-dimethyl cyclohexene-4-methylene radical, 1,2,5-trimethyl cyclohexene-4-methylene radical, cyclohexene-4-ethylene radical, 1-methyl cyclohexene-4-ethylene radical, 2-methyl cyclohexene-4-ethylene radical, 5-methyl cyclohexene-4-ethylene radical, 1,2-dimethyl cyclohexene-4-ethylene radical, 1,5-dimethyl cyclohexene-4-ethylene radical, 2,5-dimethyl cyclohexene-4-ethylene radical, 1,2,5-trimethyl cyclohexene-4-ethylene radical, cyclohexene-4-propylene radical, 1-methyl cyclohexene-4-propylene radical, 2-methyl cyclohexene-4-propylene radical, 5-methyl cyclohexene-4-propylene radical, 1,2-dimethyl cyclohexene-4-propylene radical, 1,5-dimethyl cyclohexene-4-propylene radical, 2,5-dimethyl cyclohexene-4-propylene radical, and 1,2,5-trimethyl cyclohexene-4-propylene radical.

Claim 7. (Previously presented) The rigid container of claim 1, wherein the oxygen scavenging polymer is selected from the group consisting of a ethylene/methyl acrylate/cyclohexenyl methyl acrylate terpolymer, a cyclohexenyl methyl acrylate/ethylene copolymer, a cyclohexenyl methyl methacrylate/styrene copolymer, a cyclohexenyl methyl acrylate homopolymer and a methyl acrylate/cyclohexenyl methyl acrylate copolymer.

Claim 8. (Original) The rigid container of claim 1, wherein the outer layer comprises polyethylene terephthalate, polyethylene naphthalate, or a mixture of polyethylene terephthalate and polyethylene naphthalate.

Claim 9. (Original) The rigid container of claim 1, wherein the composition further comprises a first tie layer between the core layer and the inner layer, and a second tie layer between the core layer and the outer layer.

Claim 10. (Original) The rigid container of claim 1, wherein the transition metal catalyst is a metal salt.

Claim 11. (Original) The rigid container of claim 10, wherein the metal in the metal salt is cobalt.

Claim 12. (Original) The rigid container of claim 11, wherein the metal salt is selected from the group consisting of cobalt neodecanoate, cobalt 2-ethylhexanoate, cobalt oleate, and cobalt stearate.

Claim 13. (Original) The rigid container of claim 1, wherein the oxygen scavenging composition further comprises at least one triggering material to enhance initiation of oxygen scavenging.

Claim 14. (Original) The rigid container of claim 13, wherein the triggering material is a photoinitiator.

Claim 15. (Original) The rigid container of claim 14, wherein the photoinitiator has an ultraviolet absorption window above 320 nm.

Claim 16. (Original) The rigid container of claim 1, wherein the rigid container is suitable for packaging oxygen sensitive drinks for extended freshness and shelf life.

Claim 17. (Original) The rigid container of claim 16, wherein the oxygen sensitive drink is beer, wine, or fruit juice.